

REMARKS

Claims 1, 6-8, 10-12, and 15-16 have been amended. Claims 4 and 5 have been canceled. Therefore, claims 1-3 and 6-16 are pending in the case. Further examination and reconsideration of pending claims 1-3 and 6-16 are hereby respectfully requested.

Section 103(a) Rejections

Claims 1-4, 6-9, 11-13, 15, and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over "Measurement of work function change with surface segregation of substrate element on a deposited film," by Yoshitake et al. (hereinafter "Yoshitake") in view of U.S. Patent No. 6,202,029 to Verkuil et al. (hereinafter "Verkuil"). Claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshitake in view of Verkuil and further in view of U.S. Patent No. 6,138,054 to On. (hereinafter "On"). Claims 10 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshitake in view of Verkuil and further in view of U.S. Patent No. 6,011,404 to Ma et al. (hereinafter "Ma"). Claims 4 and 5 were rejected thereby rendering their rejections moot. As will be set forth in more detail below, the §103(a) rejections of claims 1-3 and 6-16 are respectfully traversed.

To establish *prima facie* obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974), MPEP 2143.03. Obviousness cannot be established by combining or modifying the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion or incentive to do so. *In re Bond*, 910 F. 2d 81, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990). The cited art does not teach or suggest all limitations of the currently pending claims, some distinctive limitations of which are set forth in more detail below.

The cited art does not teach or suggest controlling an environment around a reference sample, removing the reference sample from the controlled environment prior to measuring a voltage of the reference sample, and returning the reference sample to the controlled environment subsequent to measuring the voltage of the reference sample. Amended independent claim 1 recites in part: "controlling an environment around the reference sample; removing the reference sample from the controlled environment; measuring a voltage of the reference sample using the non-contact voltage sensor; returning the reference sample to the controlled environment subsequent to said measuring." Support for

the amendments to independent claim 1 can be found in the claims as originally filed, for example, claims 4 and 5.

The Office Action states that "Yoshitake et al. and Verkuil et al. lack wherein the reference sample is removed from the controlled environment prior to measuring the reference sample voltage; and returned to the controlled environment subsequent to the measuring of the reference sample voltage." (Office Action -- page 7). The Examiner suggests combining On with Yoshitake and Verkuil to overcome the deficiencies in the teachings of Yoshitake and Verkuil. In particular, the Office Action states that "On discloses wherein the reference sample is removed from the controlled environment prior to measuring the reference sample voltage (col 4 lines 33-36); and returned to the controlled environment subsequent to the measuring of the reference sample voltage (col 5 lines 23-29)." (Office Action -- page 7). Applicant respectfully traverses this interpretation of the teachings of On.

For example, On discloses a control system employing a fiber optic communication link for a semiconductor processing apparatus. However, On does not teach or suggest measuring a reference sample voltage as asserted in the Office Action. In contrast, On states that "apparatus is provided for controlling the operation of a semiconductor processing system, such as ion implantation machine which includes a high voltage area where high voltage operations are performed." (On -- col. 2, lines 11-15). On also states that "The first and second controllers cooperate to monitor and control the high voltage operations." (On -- col. 2, lines 20-21). In addition, On states that "Analog signals representing the status of various sensors and control elements in the area of the high voltage operations are multiplexed." (On -- col. 2, lines 29-31). Therefore, On teaches measuring one or more parameters of a high voltage area of an ion implantation machine. As such, On teaches or suggests measuring a voltage of a system. However, On contains no teaching or suggestion whatsoever of measuring a voltage of any sample.

Furthermore, On does not teach removing a sample from a controlled environment and returning the sample to the controlled environment. For example, in the portion of On cited in the Office Action, On states that "the controller 40 may be employed to control all other operations of the machine 10, including ion implantation operations and transporting of the wafers between operating stations." (On -- col. 4, lines 33-36). Therefore, On teaches moving a wafer between different stations within the ion implantation machine. However, as is known to one of ordinary skill in the art, controlled environments will be created within all stations with processing tools such as ion implantation machines. Therefore, On simply teaches moving wafers from one controlled environment to another. In addition, since On does not teach or

suggest the claimed measuring as set forth in detail above, On cannot teach removing a reference sample from a controlled environment prior to the claimed measuring and returning the reference sample to the controlled environment subsequent to the claimed measuring.

Moreover, On is not analogous prior art for the present claims. In particular, On contains teachings in the field of monitoring and controlling semiconductor processing systems such as ion implantation machines. As taught by On, monitoring and controlling the semiconductor processing systems involves monitoring and controlling one or more parameters of the semiconductor processing systems. However, for at least the reasons set forth above, a thorough reading of the teachings of On reveals that On contains no teaching whatsoever that is related to a method for calibrating the work function of a non-contact voltage sensor. Therefore, the teachings of On are not in the field of the Applicants' endeavor and are not reasonably pertinent to the particular problem with which the present inventors were concerned. Consequently, On cannot be relied on as a reference for a basis of rejections of the present invention. The examiner must determine what is "analogous prior art" for the purpose of analyzing the obviousness of the subject matter at issue. "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the invention was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). MPEP 2141.01(a).

Likewise, Ma cannot be combined with Yoshitake and Verkuil to overcome deficiencies therein. For example, Ma discloses a system and method for determining near-surface lifetimes and the tunneling field of a dielectric in a semiconductor. However, Ma does not teach or suggest controlling an environment around a reference sample, removing the reference sample from the controlled environment prior to measuring a voltage of the reference sample, and returning the reference sample to the controlled environment subsequent to measuring the voltage of the reference sample, as recited in claim 1. Consequently, Ma does not teach or suggest all limitations of claim 1 and cannot be combined with Yoshitake and Verkuil to overcome deficiencies contained therein.

For at least the reasons set forth above, none of the cited art, either individually or in any combination thereof, teaches or suggests controlling an environment around a reference sample, removing the reference sample from the controlled environment prior to measuring a voltage of the reference sample, and returning the reference sample to the controlled environment subsequent to measuring the voltage of

the reference sample, as recited in claim 1. Consequently, the cited art does not teach or suggest all limitations of claim 1.

For at least the reasons stated above, claims 1 as well as claims dependent therefrom, are patentably distinct over the cited art. Accordingly, removal of the § 103 rejections of claims 1-3 and 6-16 is respectfully requested.

CONCLUSION

This response constitutes a complete response to all issues raised in the Office Action mailed October 7, 2004. In addition, the art cited but not relied upon is not believed to be pertinent to the patentability of the present claims. In view of the remarks traversing the rejections, Applicants assert that pending claims 1-3 and 6-16 are in condition for allowance. If the Examiner has any questions, comments, or suggestions, the undersigned earnestly requests a telephone conference.

The Commissioner is authorized to charge any required fees or credit any overpayment to deposit account number 50-3268/5589-05900.

Respectfully submitted,



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